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EM ELECTRET CONDENSER MICROPHONE

Acoustic Product Specification

Product Number: EM-4015N-44

Release | Revision: A/2018

TYPE
Noise Cancelling

CONTENTS
This document contains the technical specifications for the noise cancelling back electret condenser microphone.

Electrical Characteristics

Sensitivity

Symbol: S **Unit:** dB

Condition: 0dB=1V/Pa, at 1kHz

Limits: Min: -47 **Center: -44** Max: -41

Output impedance

Symbol: Z out **Unit:** KΩ

Condition: f=1kHz

Limits: Max: 5.0

Current Consumption

Symbol: IDSS **Unit:** μA

Condition: VCC =2.0V,RL=2.2KΩ

Limits: Max: 500

Signal to Noise Ratio

Symbol: S/N **Unit:** dB

Condition: at 1kHz S.P.L=1Pa (A-Weighted Curve)

Limits: Min: 55

Decreasing Voltage

Symbol: ΔS **Unit:** dB

Condition: VCC=3.0V to 2.0V

Limits: Max: -3

Operating Voltage

Unit: V

Limits: Min: 1.0 Max: 5

Maximum input S.P.L

Unit: dB

Limits: Max: 110

Testing condition

Temperature: 20±2℃

Humidity: 65±5%

Dimension

Ø4.0 x 1.5mm

IP Level

IP50

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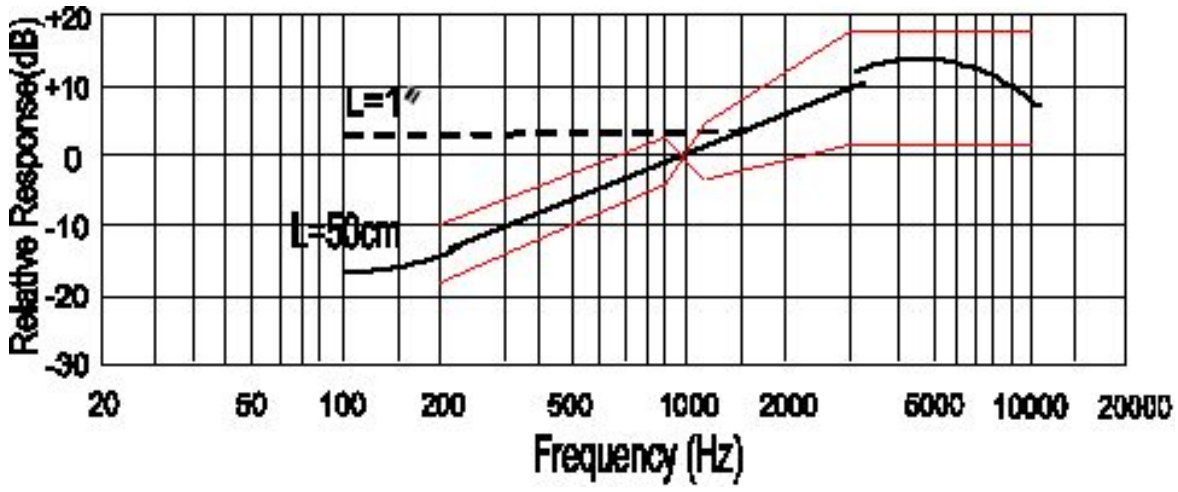
Typical Frequency Response Curve

Frequency Response

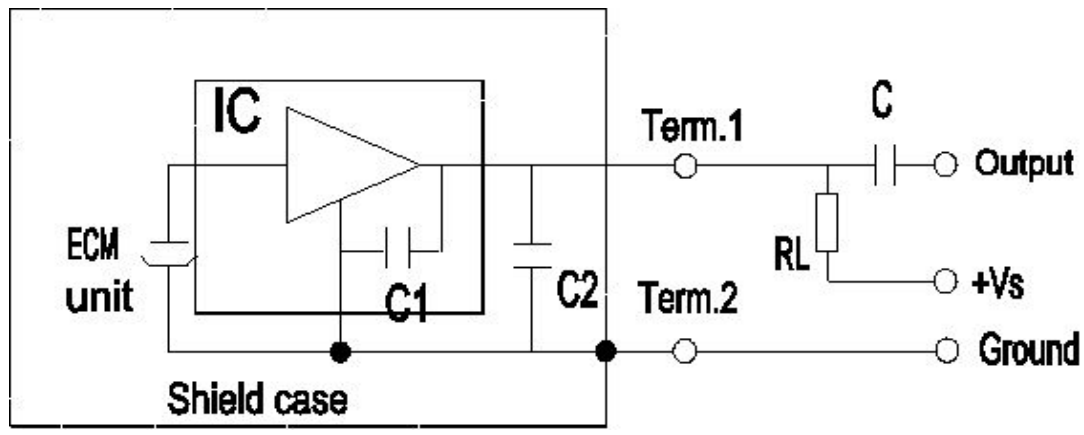


Standard Test Fixture

Frequency(Hz)	Lower Limit(dB)	Upper Limit(dB)
200	-18	-10
800	-6	+2
1000	0	0
1200	-4	+4
3000	+2	+18
5000	+2	+18
10000	+2	+18

Measurement Circuit

RL = 2.2KΩ VS = 2.0V C1 = 10pF C2 = 33pF C = 1μF



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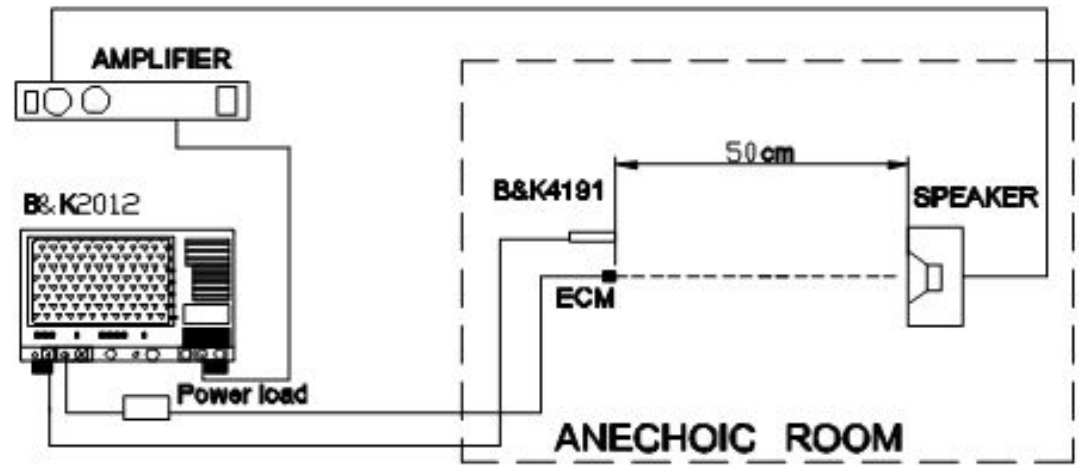
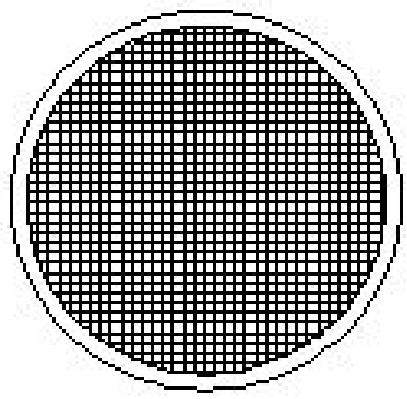
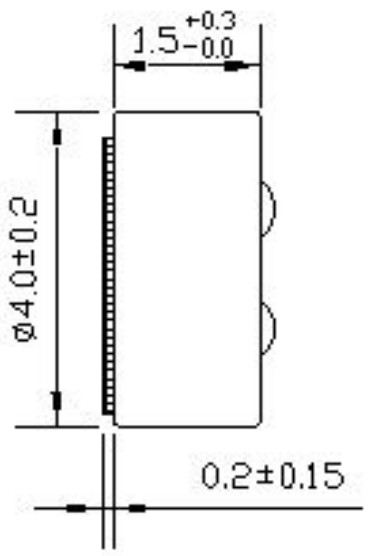
Measurement Setup Drawing

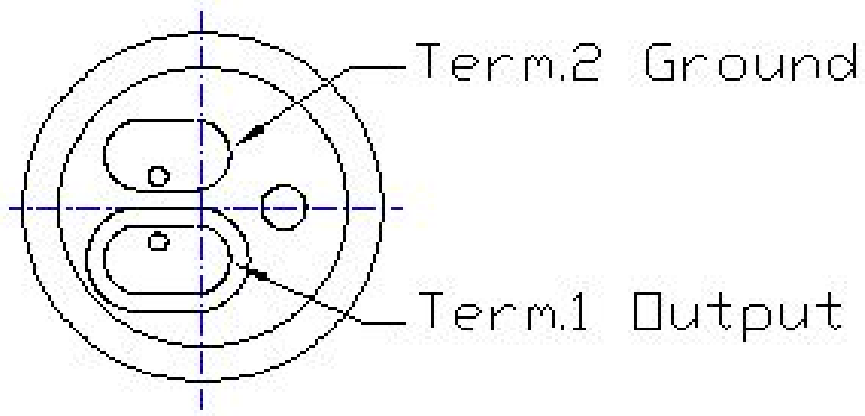


Product External and Dimension

Unit: mm







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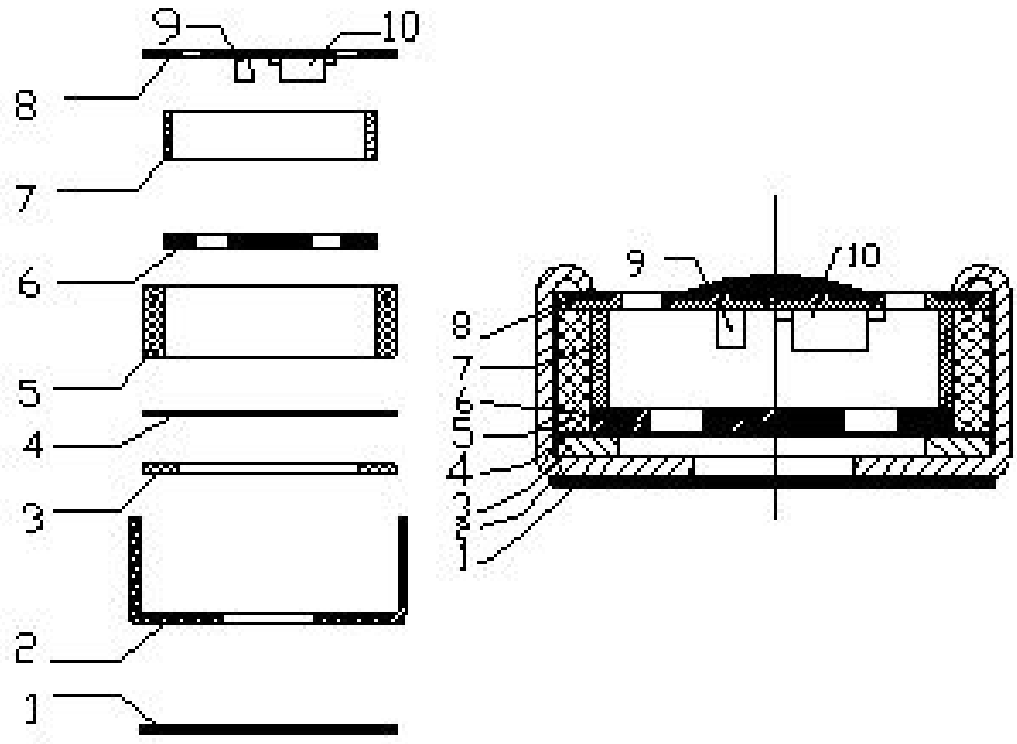
Exploded Drawing and Material Table



No.	Part Name	Material	Quantity	Remark
1	Dustproof gauze	Non-weave cloth	1	
2	Case	Al-Mg alloy	1	
3	Diaphragm		1	
4	Spacer		1	
5	Chamber		1	
6	Electret Plate		1	
7	Copper ring		1	
8	PCB	FR4	1	
9	Capacitors		1	33pF
10	FET	Build in 10pF capacitors	1	

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Temperature Conditions

Operating Temperature Range

-40℃~+85℃

Storage Temperature Range

-40℃~+85℃

Terminal Mechanical Strength

Terminal mechanical strength to be no interference in operation after pulled the terminal with 1kg strength for 1 minute.

Reliability Test

After each of the following tests, the sensitivity of the microphone should be within ±3dB of initial sensitivity after 3 hours of conditioning at 20℃.

Vibration Test

Frequency : 10Hz~55Hz

Amplitude: 1.52mm

Change of Frequency : 1 octave/min

2 hours in each of axis

High Temperature Test

+70℃ for 72 hours.

Low Temperature Test

-20℃ for 72 hours.

Humidity Test

90%～95%RH,+40℃ for 240 hours.

Thermal Shock Test

–40°C, 30 minutes ↔ +80°C, 30 minutes, repeated 32 cycles → room temperature, 3 hours.

Temperature Cycles

-20℃ ↔ +25℃ ↔ +70℃ ↔ -20℃
(2h) (1h) (2h) (1h) (2h) (1h) (2h) for 10 cycles.

Packing Drop Test

Height: 1m

Procedure: 5 times from each of axis

Static Electricity Discharge (ESD)

The microphone under test must be discharged between each ESD exposure without ground. (contact: +/-6kV, air: +/-8kV)

There is no interference in operation after 10 times exposure

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Soldering Condition

We suggest using anti-static welding machine which can control soldering temperature automatically.

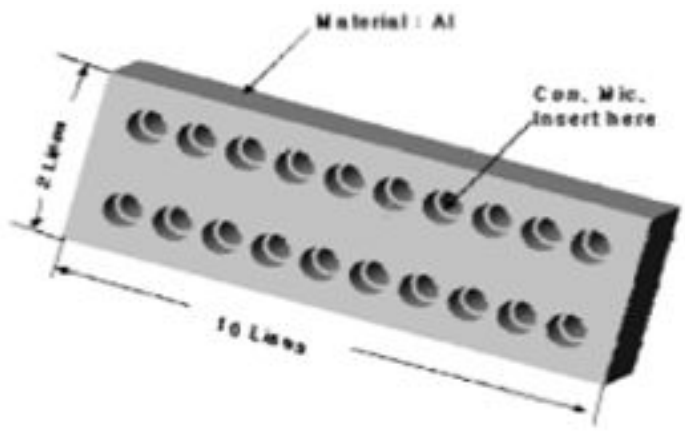
Soldering temperature should be controlled under 320℃ and soldering time for each terminal should be 1~2 seconds.

Microphone should be fixed on the metal block (heat sink), which has high radiation effects, and heat sink shall contact with MIC tightly.

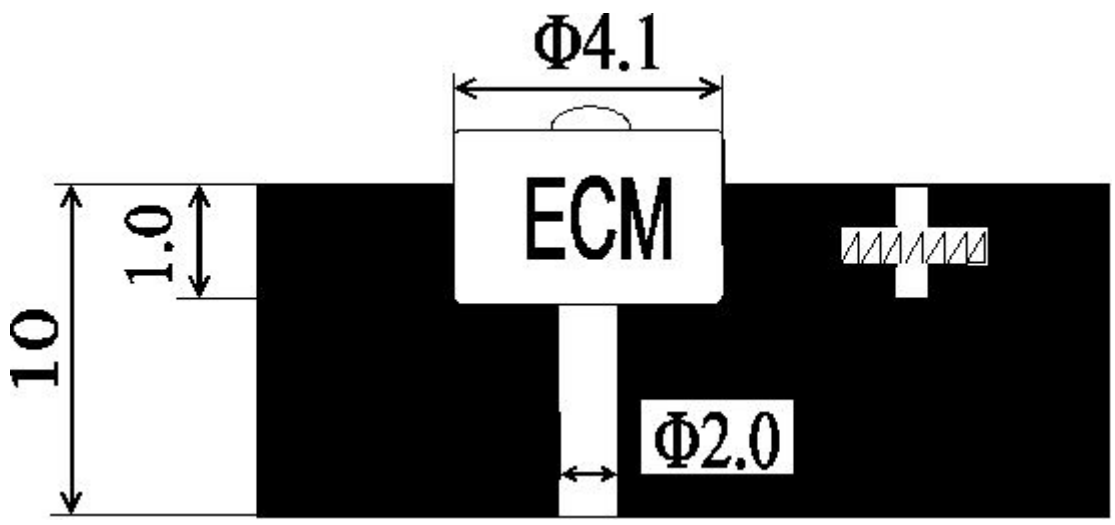
Microphone may easily be destroyed by the static electricity. The countermeasure for eliminating the static electricity shall be by grounding the worktable and operator.

Heat Sink

Shape of heat sink



Shape of hole at fixed part



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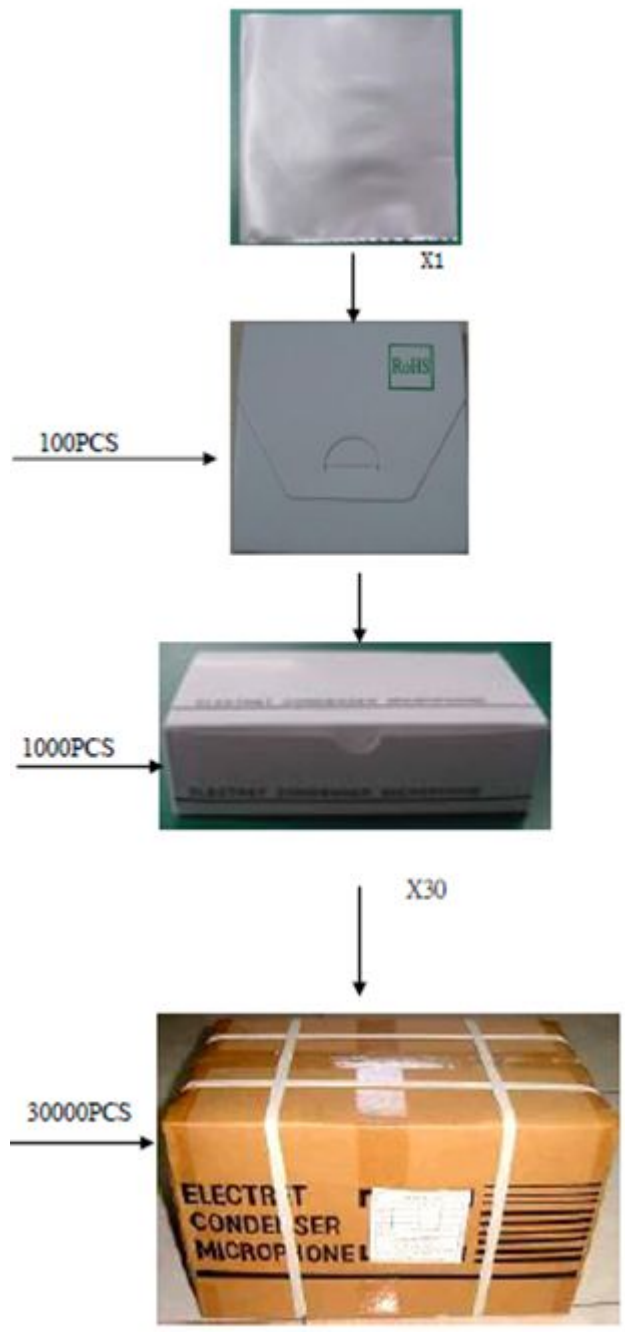
Packing



Details

Dimension: (length x width x height)

Anti-Static Bag:
80mm x 80mm x 2mm
Small Packet:
80mm x 80mm x 10mm
Middle Box:
175mm x 85mm x 50mm
Carton Size:
550mm x 230mm x 235mm

Quantity and Weight

Small Box: 100 pcs
MIddle Box: 1000 pcs
Carton: 30000 pcs
1PC: 0.1g
Net Weight: 3.0kg
Gross Weight: 7.0kg